Course Type	Course Code	Name of the Course	L	T	P	Credits
DE	NECD528	Microwave Solid State Devices	3	0	0	3

Course Objective

The course aims to provide idea about solid state devices used in RF & Microwave Engineering. It provides application domains of different solid state devices.

Learning Outcomes

- Understanding the design concept of various RF/Microwave solid state devices.
- Ability to design discrete RF/ Microwave solid state devices.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Basics of Solid State Devices. Microwave Transistors: Microwave BJT, HBT	6	This unit will provide basics of solid state devices and list of the devices used in microwave frequency. It also provides knowledge regarding working principles of bipolar transistors used in microwave frequency.
2	Tunnel diode, pin diode, Varactor diode, Introduction to parametric amplifier, Manley-Rowe power relation.	8	This unit will help student to understand some basic devices like tunnel diode, pin diode, varactor diode, parametric amplifier.
3	Microwave Field effect Transistors: JFET, MOSFET, MESFET, HEMT.	10	This unit will help students to know the physics of different microwave field effect transistors.
4	Transferred Electron Devices: Gunn effect diodes, RWH Theory, Mode of Operation, LSA diodes, InP diodes, CdTe Diodes, Microwave generation and amplification.	8	This unit will provide knowledge about working principles of different transferred electron devices.
5	Avalanche Transit Time Devices: Read Diode, IMPATT Diode, TRAPATT Diode, BARITT Diode	10	Here, concepts of different avalanche transit time devices used in microwave engineering will be provided.
	Total	**42**	

Text Book:

1. Microwave Devices and Circuits, by Samuel Liao, 3rd edition, 1990.

Reference Books:

1. Microwave devices, circuits and subsystems for communications engineering, by Ian A. Glover, Steve Pennock, Peter Shepherd, 1st edition, 2007.
2. Microwave Engineering, by David M. Pozar, Wiley International, Fourth Edition, 2012.